

THE NORTHERN MINER

THE GLOBAL
MINING
NEWSPAPER

www.northernminer.com

OCTOBER 20-26, 2008 VOL. 94, NO. 35 • SINCE 1915

Pampa de Pongo packs punch for Cardero



CARDERO RESOURCE

A drill rig tests Cardero Resource's Pampa de Pongo iron ore deposit, in the coastal region of southern Peru's Marcona district. A new scoping study of block-caving the deposit's 750-million-tonne Central zone generates an internal rate of return of 18% and a net present value of US\$3.3 billion.

BY GWEN PRESTON

VANCOUVER — Southern Peru's arid coastal region, directly across the pond from resource hungry countries in Asia, is flexing its iron-rich muscles for **Cardero Resource** (CDU-T, CDY-X).

A preliminary economic assessment of Cardero's Pampa de Pongo iron deposit in Peru's Marcona iron-copper district demonstrates an after-tax net present value of US\$3.3 billion, using an 8% dis-

count rate, and an after-tax internal rate of return of 18% for the deposit's 750 million-tonne Central zone alone.

The project would yield an undiscounted after-tax cash flow of about US\$17.6 billion over the life of the mine, or US\$732 million a year.

Cardero optioned the property from **Rio Tinto** (RTP-N, RIO-L) in 2003. The total price was \$500,000.

"We're starting to think it might be

worth a bit more than that," says Keith Henderson, Cardero's vice-president of exploration, hiding a smile.

Pampa de Pongo sits only 38 km from the San Juan deep-water port on the Pacific coast. Some 40 km northwest is Chinese miner **Shougang Hierro Peru's** Marcona iron ore mine, which uses the other deep-water port in the area, Puerto San Nicholas. According to Rio, Marcona and Pampa de Pongo are

THE NORTHERN MINER

THE GLOBAL
MINING
NEWSPAPER

www.northernminer.com

OCTOBER 20-26, 2008 VOL. 94, NO. 35 • SINCE 1915

the largest iron accumulations with associated copper and gold along the western coast of South America.

The Pampa de Pongo property is an iron oxide-copper-gold (IOCG) prospect, about 60 km southwest of the city of Nasca and about 400 km south of Lima. Since acquiring the project in 2004, Cardero has only had time to drill the Central and South zones of mineralization.

In the Central zone sits 750 million inferred tonnes grading 41.7% iron, 0.093% copper and 0.059 gram per tonne gold. A resource estimate for the South zone is expected in the coming weeks. Henderson says it is smaller — likely around 100 million tonnes — but slightly higher in grade.

At full production and sourcing ore only from the Central zone, Pampa de Pongo would produce an estimated 15

million tonnes of iron ore pellets per year. Over the course of its estimated 24-year lifespan, the deposit would produce 330 million tonnes of blast furnace pellets grading 64.5% iron, 535 million lbs. of copper and 493,000 oz. gold.

That output equals about 35% of the total current pellet production of **Vale** (RIO-N), the world's top iron ore producer. (Vale currently produces 43 million tonnes of iron ore pellets from 23 mines and exports pellets from nine plants via four shipping terminals.) The Pampa project's annual production would be greater than the combined production from all of Rio Tinto's Labrador iron projects.

The SRK scoping study concluded Pampa de Pongo's Central zone deposit should be developed as a 75,000-tonne-per-day underground block-cave operation. Ore would be crushed and ground and an iron concentrate produced

through wet magnetic separation. A separate flotation circuit would produce a copper-gold byproduct concentrate. The iron concentrate would be converted into iron pellets at the port site.

National grid power lines cross the project (Cardero had to request the lines be shut down while the company conducted its magnetics surveys) and the Pan American Highway runs right past its border and through to the San Juan port.

The Peruvian government is expected to put out tender for bids to expand the San Juan port shortly. The country needs another mega-capacity, deep-water port — Lima's port is already working at capacity and the Brazilian government is building a road across the Andes into Peru to gain access to a port on the Pacific. Goods heading from Brazil to Asian markets — including millions of tonnes of iron pellets — currently have to



Drilling through the sand and dune cover at Cardero Resource's Pampa de Pongo iron ore project, in southern Peru. Cardero optioned the property from Rio Tinto in 2003.

BY THE NORTHERN MINER

THE NORTHERN MINER

THE GLOBAL
MINING
NEWSPAPER

www.northernminer.com

OCTOBER 20-26, 2008 VOL. 94, NO. 35 • SINCE 1915

head around Cape Horn or through the Panama Canal.

“The port is really critical to this story,” Henderson says. “That it’s so close and that it’s going to be expanded on a timeline that works perfectly with ours is just key.”

A natural gas pipeline is currently being built to power the pelletizing plant at Puerto San Nicholas that processes concentrate from the Marcona mine; it would take another 10 km of pipe laid across the desert for the line to reach the San Juan port, where the Pampa pelletizing plant would be built.

Using a base-case iron ore price of US\$128 per tonne, the scoping study estimates that the life-of-mine project revenue, net of all off-site costs and project royalties, and including copper and gold credits, would be about US\$42 billion, or an average net revenue of US\$1.75 billion per year.

Operating costs over the course of the mine’s lifetime are forecast to be about US\$7.3 billion, or US\$304 million on an average annual basis. Life-of-mine net pretax operating cash flow is estimated at US\$34.7 billion or US\$1.44 billion a year.

Operating costs have been forecast at roughly 17% of net revenue, providing a very high project operating margin.

Pretax net revenue after all off-site costs and royalties, and including copper and gold credits, is about US\$127 per tonne of pellets sold. The corresponding total cost of production would be roughly US\$22 per tonne of pellets sold, yielding net operating cash flow per tonne of

pellets produced of US\$105.

Grade factor is believed to be about 90% (10% dilution). Block caving should yield lower levels of dilution in the early years of production.

Iron recovery is estimated to be about 93.4% with a final pellet grade of 64.5% iron, while copper and gold recovery from concentrate is conservatively estimated at 50% each.

MIDREX Technologies is evaluating the suitability of the Pampa de Pongo pellets as direct reduction pellets, which would attract a 10% premium on price. MIDREX’s report on its Pampa studies is expected shortly.

Preproduction capital is forecast in the neighbourhood of US\$3.3 billion. Expansion and sustaining capital is estimated at US\$4.2 billion. All capital costs include 20% contingency.

Cardero is not shy about the fact that the company is looking for a buyer or joint-venture partner for Pampa de Pongo.

“This is too big for us alone,” says Henderson. “We would like to keep a percentage of it. That’s partly just common sense — any partner joining the project would need our Peruvian management team’s knowledge and connections. And it’s partly to maintain exposure to iron ore over the long term.”

The Central zone study is a milestone for Cardero, but the company still has a full plate. When the resource estimate for the South zone comes in, it will also indicate whether the zone is amenable to open-pit mining. Henderson says that

critical question will determine whether or not the small zone will be included in prefeasibility work, which is the next step in development.

In addition, Cardero flew an expanded magnetics survey of the Pampa property earlier this year and the resulting 3-D model indicates the potential for another 400 million tonnes of magnetite mineralization in the East zone.

Rio Tinto drilled a single hole in the East zone in 1996; the model shows that hole hit just along the southern edge of the anomaly. The hole returned 191 metres of magnetite mineralization. Henderson says punching a hole into the middle of the anomaly is one of his top priorities.

The company expects to be drilling the property again next month, in a two-pronged program. One focus will be on infill drilling the Central and South zones; the other goal will be to delineate a resource in the East.

Henderson says if the East zone resource develops as he thinks it will, the project’s throughout could be considerably higher.

“The East zone is far enough away from the Central and South zones that it could be mined simultaneously,” he says. “That could really ramp up production.”

The production scenario as it stands now was enough to impress investors, even in the current markets. Cardero shares closed up 54¢ or 51% at \$1.59 on the release of the scoping study. The company has a 52-week trading range of 97¢-\$3.59 and 57.7 million shares outstanding.